

REPORT OF THE FORTY-EIGHTH ANNUAL MEETING OF THE OHIO ACADEMY OF SCIENCE

WILLIAM H. ALEXANDER,

Secretary

The Forty-eighth Annual Meeting of the Ohio Academy of Science was held at the College of Wooster, Wooster, Ohio, on May 6 and 7, 1938, under the presidency of Prof. Charles G. Shatzer, of Wittenberg College, Springfield, Ohio. The College of Wooster, ably assisted by the Ohio Agricultural Experiment Station, made every possible effort to anticipate and provide for the requirements, comfort and pleasure of all visiting scientists and the verdict seemed to be that the meeting was an unusually successful one from every point of view. Thanks to both institutions!

The business portion of the meeting consisted of two short sessions, both held in the Netta Strain Auditorium, Taylor Hall, of the College of Wooster, the first beginning at 9:30 A. M. on Friday, May 6, and the second on Saturday morning.

Very briefly, for economical reasons, the chief items of business transacted at the business sessions were:

- I. The announcement by the President of the appointment of the three committees, viz.:
 1. *Membership*—JOHN L. RICH, Chairman; GEORGE D. HUBBARD, D. F. MILLER.
 2. *Resolutions*—EUGENE VAN CLEEF, Chairman; WM. C. BEAVER, J. PAUL VISSCHER.
 3. *Necrology*—HERBERT OSBORN, Chairman; PAUL E. MARTIN, FRANK J. WRIGHT.
- II. Reports of Officers.
 1. Secretary.
 2. Treasurer.
 3. Librarian.
- III. Reports of Committees.
 1. The Executive, by the Secretary.
 2. Trustees of the Research Fund, by Herbert Osborn.
 3. Membership Committee, by John L. Rich.
 4. Save Outdoor Ohio, by A. E. Waller.
 5. Necrology Committee, by Dr. Herbert Osborn.
 6. Joint Administrative Board, Ohio Journal of Science, by B. S. Meyer.
 7. Resolutions Committee, by Eugene Van Cleef.

IV. Motions Passed.

1. Authorizing the formation of a Section of Mathematics.
2. To co-operate with the Director of Education.
3. As to effective date of the beginning of memberships.
4. Election of representative on the Council of the A. A. A. S., referred to the Executive Committee with power.
5. To meet with the University of Cincinnati in 1939.

V. Amendments Passed.

1. In as much as the duties of the Publications Committee as defined in Article IV of the Constitution have been merged in the duties of the Joint Administrative Board of the Ohio Journal of Science, it is recommended that the Constitution be amended by the omission of Sections 3 and 14 of Article IV. (Rec. by the Exc. Com. Adopted.)
2. *Membership Committee.*—The Membership Committee shall consist of one member from each Section of the Academy, elected by the Section or appointed by the Vice-President of the Section. (Art. IV, Sec. 3, approved as amended.)
3. *Duties of Membership Committee.*—The Membership Committee shall seek to secure new members for the Academy, pass upon the sufficiency of the applications, and make report with recommendation to the Executive Committee or to the Academy. (Art. IV, Sec. 14 approved as amended.)

VI. Resolutions Passed.

1. *Resolved*, That applications for membership approved at the spring meeting be made effective dating from the beginning of the calendar year in which they are approved.
2. *Resolved*, That the business of the Ohio Academy of Science, beginning with the fiscal year 1939-1940 and thereafter, be transacted by a Council. (Rec. by Exec. Com.)
3. *Resolved*, That a committee be appointed by the President to review the Constitution and By-Laws of the Academy and report with recommendations as to changes necessary to comply with the preceding resolution, at the annual meeting in 1939, this resolution to serve as notice to amend. (Rec. by Exec. Com.) (In accordance with said resolution the following were appointed:—F. C. Blake, G. D. Hubbard and F. H. Kreckler.)
4. *Resolved*, That a committee on counsel and co-operation in the study of the science needs of the public schools be appointed by the President in 1938-1939, to study the needs of the public school science teachers with reference to their academic preparation and to consult and co-operate with the State Director of Education with a view to offering him any support and assistance at their command. (In accordance with said resolution the following were appointed:—C. G. Shatzer, H. C. Sampson, A. W. Lindsey, L. W. Taylor and W. A. Manuel.)

5. "The Western Society of Naturalists, meeting in Berkeley, California, December 28, 29 and 30, 1937, records its emphatic opposition to any measure such as the proposed 'State Humane Pound Law' which will hinder or curtail animal experimentation as conducted by those fully qualified in biology and medicine. It is the belief of this Society that the present level of health and humane protection of man and animals and further advance in our knowledge of the phenomena of life can be maintained only by constant vigilance and by continued study of the nature of vital processes through the experimental investigation of living animals. Every effort should be made to provide the necessary animals for scientific studies rather than to interfere by the passage of hampering legislation." (Unanimous approval was given this resolution at the request of the California Society for the Promotion of Medical Research.)

See the reports of the Conservation Committee and the Representative on the Save Outdoor Ohio Council for other resolutions.

There was only one general scientific session of the Academy and that was on Friday morning following the first business meeting. At this general session the Academy had the pleasure of hearing an address on "Heredity and Education," by Dr. Paul Popenoe, the distinguished director of the Institute of Family Relations, Los Angeles, Calif.; also one by State Director of Education E. N. Dietrich, of Columbus, Ohio, on "The Training of Science Teachers."

The annual dinner was not only a festive occasion but a real intellectual treat. The outstanding feature, of course, was the Presidential Address by President Charles G. Shatzer, on "When Are We Scientific." He gave the scientist much food for sober thought. Following the presidential address, Dr. George B. Barbour, of the University of Cincinnati, showed a color film of "Vesuvius in Eruption." In addition to these addresses, there was the usual exchange of courtesies, President Charles F. Wishart, of the College of Wooster, and Director Edmund Secrest, of the Ohio Agricultural Experiment Station, extending gracious words of cordial welcome and good wishes, to which Dr. Dayton C. Miller, of Case School of Applied Science, Cleveland, made a happy response appropriately interpreting the feelings of every member of the Academy present on that delightful occasion.

And so by common consent the forty-eighth annual meeting was one of the most successful the Academy has ever held and very likely all who attended are already dreaming of a return visit!

A very complete, detailed (stenographic) report of this meeting is on file in the office of the Secretary.

Report of the Secretary

WOOSTER, OHIO, May 6, 1938.

To the Ohio Academy of Science:

As in former years, the office of the Secretary has endeavored most diligently to look after the interests of the Academy with efficiency and despatch. We wish once again to record our high appreciation of the fine spirit of co-operation displayed at all times both by officers and members. We have co-operated in every possible way with the Treasurer in his fine efforts to secure new members for the Academy and while we had hoped to report one hundred or more, we are glad to report a half-a-hundred or more. The roll of members has been thoroughly purged and we now have something like 500 active members. With the approach of our semi-centennial year, the campaign for new members should go on with increased vigor. A goal of 1,000 members by 1940 is not at all unreasonable and should be our minimum. In a State with some 60 colleges and universities to draw upon, the Ohio Academy might easily become the largest in the country.

The Secretary attended all the sessions of the Council of the A. A. A. S. at Indianapolis, Ind., last December, and all the meetings of the Academy Conference. Our chief service to the Academy at this meeting of the A. A. A. S. was, perhaps, in clearing the way for a slightly increased allowance for research, we hope, when these funds are distributed.

One item of interest to report is the securing of some of the original minute books, papers and pamphlets, etc., found among the effects of the late Prof. L. B. Walton, through the courtesy of Mrs. Walton. These will be useful to the Committee on Historical Statistics and Lists, in connection with the Semi-Centennial. It may not be out of place to observe at this point that if we are to make this observance all it might be and we hope it will be, every member must put his or her shoulder to the wheel and give those who undertake to lead us a united, hearty support from the very start.

Respectfully submitted,

WM. H. ALEXANDER,
Secretary.

*Report of the Treasurer**To the Ohio Academy of Science:*

Statement of Income and Expense for the year ended December 31, 1937.

INCOME:

Membership Dues.....	\$ 965.00
Grants for Research from A. A. A. S.....	275.00
Interest on Bonds.....	78.00
Sale of Publications.....	24.18
Dinner Receipts.....	245.00

Total Income.....\$1,587.18

EXPENDITURES:

Faculty Club Dinner Expense.....	\$274.69
Speakers.....	50.00
Clerical Assistance.....	51.00
Postage and Telegraph.....	37.85
Office Supplies.....	5.90
Expenses of Officers to Meetings.....	87.06
Printing:	
Proceedings, Ohio Journal of Science.....	130.40
Other.....	140.34
Subscriptions, Ohio Journal of Science.....	501.00
Membership, Save Outdoor Ohio Council.....	8.00
Research Grants.....	175.00
Secretary's Honorarium.....	100.00
Safety Deposit Box.....	3.30
Auditing Expense.....	3.00
Reporter for 1937 Meeting.....	7.00
Bank Charges.....	6.09

Total Expenditures.....1,580.63

Net Increase in Net Worth for the Year.....\$ 6.55

BALANCE SHEET
As at December 31, 1937

ASSETS

Current Expense Fund:

Cash in Bank.....	\$ 191.96
Bonds—Consolidated Federal Farm Loan 3%, 1945-55.....	1,300.00

Total Current Expense Fund.....\$1,491.96

Research Fund:*

Cash on Deposit.....	\$ 247.27
Banc Ohio Securities Company Stock (at cost).....	437.50
Bonds—Fort Hayes Hotel, Columbus (at cost).....	1,300.00

Total Research Fund.....1,984.77

Total Assets.....\$3,476.73

LIABILITIES AND NET WORTH

Liabilities.....	None
Net Worth—Ohio Academy of Science.....	\$3,476.73

Total Liabilities and Net Worth.....\$3,476.73

*These funds are not in the custody of the Treasurer.

Respectfully submitted,

EUGENE VAN CLEEF,
Treasurer.

Report of the Auditor

To the Ohio Academy of Science:

I have examined the accounts and records of the Ohio Academy of Science for the periods January 1-May 28, 1937; May 28-December 31, 1937, and I hereby certify that in my opinion the accompanying statements of cash receipts and disbursements, and the attached Balance Sheet presents the financial condition as at December 31, 1937.

Respectfully submitted,

D. M. SHONTING,
Public Accountant.

Report of the Board of Trustees, Research Fund

To the Ohio Academy of Science:

During the past fiscal year there have been additions to the Fund of \$71.00 from interest and dividends, so that the amount subject to check was \$247.27 on December 31, 1937. A statement for the fiscal year, ending December 31, 1937, is as follows:

RECEIPTS

Balance on hand December 31, 1937.....	\$ 177.02
Received from Interest and Dividends.....	71.00
Total.....	\$ 248.02

DISBURSEMENTS

Service Charge, Ohio National Bank.....	\$.75
Balance on hand, Checking Account.....	247.27
Total.....	\$ 248.02
No changes have been made in investments.	
Bonds at Face.....	\$1,300.00
Stock, Ohio National Bank, at Cost.....	437.50
Total Invested.....	\$1,737.50
Balance on Deposit, Checking Account.....	247.27
Total Assets.....	\$1,984.77

Receipts since December 31, 1937, are \$36.50, less service charge leaves us a checking account of \$283.52. No grants have been charged to this account the past year.

By action of the Executive Committee the Board was authorized to assign the allowance coming from the A. A. A. S. and the following grants were allotted, the items being carried in the Treasurer's account:

To Dr. D. C. Rife, Ohio State University, for genetic studies of monozygotic twins and other multiple births, \$75.00.

To Mr. Wayne M. Felts, Cincinnati University, for research on an acid intrusive in the Cascade Mountains of Southwestern Washington, \$100.00.

To Dr. R. A. Dobbins, Ohio Northern University, for Vegetation of the northern 'Virginia Military Lands' of Ohio, \$100.00.

These requests were accompanied by ample endorsements by Academy members and the allotments have been reported to the Permanent Secretary of the A. A. A. S. for his information and record.

As we may expect another allowance from the American Association which it is desirable to allot without delay and as we have a balance from which some grants may be made we will be pleased to receive applications and to act upon them without delay.

Respectfully submitted,

HERBERT OSBORN, *Chairman*,
WM. LLOYD EVANS,
Trustees.

Report of the Executive Committee

By the Secretary

WOOSTER, OHIO, May 6, 1938.

To the Ohio Academy of Science:

Your committee has held two well-attended meetings for the transaction of Academy business during the year: one on December 18, 1937, in the office of the Treasurer, and the other last evening at the Ohio Hotel, Wooster, Ohio.

At the first meeting, the chief items of business transacted were: (1) The approval of five applications for membership in the Academy; (2) the approval of the payment of \$175.00 from the Research Fund for approved projects; (3) the authorization of the purchase of books for the use of the Treasurer, not to exceed \$25.00 in cost; (4) the approval of a membership campaign as outlined by the Treasurer; (5) approval of the purchase of certain lands known as "Fort Hill" and "Cedar Swamp" for State park purposes, the Secretary being instructed to so advise the Governor and certain other members of the General Assembly; (6) elected the Secretary to represent the Academy on the Council of the American Association for the Advancement of Science and at the Conference of State Academies; (7) the fixing of the date of the next annual meeting of the Academy for May 6 and 7, 1938; (8) an allowance of \$15.00, or as much thereof as necessary, was voted for each Vice-President and the same amount for a stenographer at the annual meeting; (9) the election of the following persons in accordance with Item No. 10 of the preliminary report on the semi-centennial as chairmen of Group A Committees:

- (1) *Publicity*—EDWARD S. THOMAS, Ohio State University.
- (2) *Program*—CLARENCE H. KENNEDY, Ohio State University.
- (3) *Speakers*—FRANK J. WRIGHT, Denison University.
- (4) *Invitations*—(To be supplied later).
- (5) *Historical Statistics and Lists*—SAMUEL RENSHAW, Ohio State University.

At the second meeting, it was voted: (1) to approve and recommend the election of 52 new applications; (2) to recommend the approval of certain amendments to the Constitution and By-Laws; (3) to recom-

mend that the Academy go on record as favoring the council form of government in the transaction of its business and that a committee be appointed to suggest the necessary changes in the Constitution at the next annual meeting; (4) to approve the petition of 17 members for the formation of a Section of Mathematics; (5) to recommend that an extension of time be given the Nominating Committee for the selection of a Director for the semi-centennial; (6) to recommend that the Academy accept the invitation of the University of Cincinnati to hold the 1939 annual meeting at that institution.

Report of the Committee on the Election of Fellows

WOOSTER, OHIO, May 6, 1938.

To the Ohio Academy of Science:

The Committee on the Election of Fellows in the Ohio Academy of Science, consisting, as you know, of the officers of the Academy and the Vice-Presidents of the Sections, met this morning at the College of Wooster and elevated the following members to the rank of Fellows in the Ohio Academy of Science, viz.:

DR. FRED A. CARLSON.....	Ohio State University
DR. RAYMOND ANSON DOBBINS.....	Ohio Northern University
DR. ROBERT ARTHUR HEFNER.....	Miami University
DR. WALTER C. McNELLY.....	Miami University
DR. JOHN J. WOLFORD.....	Miami University

Respectfully submitted,

WM. H. ALEXANDER,
Secretary.

Report of the Joint Administrative Board of the Ohio Journal of Science

COLUMBUS, OHIO, May 4, 1938.

To the Ohio Academy of Science:

The meeting of the Joint Administrative Board was held at Ohio Wesleyan University, Delaware, Ohio, on April 16, 1938. Present were all members of the Board, the Editor and the Business Manager. The meeting was called to order by Chairman Rice at about 1:00 P. M. The minutes of the preceding meeting were read and approved.

Upon motion, the terms of all present officers were continued for the year 1938. Both the Editor and the Business Manager informed the Board that they did not care to have their terms of office prolonged beyond ten years, and it was suggested that it would be desirable for the Board to begin to look for persons qualified to fill these offices.

The Business Manager presented his financial report as follows:

RECEIPTS

Balance from 1936.....	\$ 247.92
University Allowance.....	750.00
Ohio Academy of Science, Dues.....	598.50
Ohio Academy of Science, Publication of Proceedings.....	191.59
Sigma Xi, Special Grant.....	299.27

Subscriptions.....	83.50
Author's Payments for Plates.....	161.68
Sale of Back Numbers.....	6.50

\$2,338.96

EXPENDITURES

Spahr & Glenn Co., Printing Vol. 36, No. 5.....	\$ 249.50
Spahr & Glenn Co., Printing Vol. 37, Nos. 1-5.....	1,195.62
Spahr & Glenn Co., Envelopes.....	62.50
Postmaster.....	141.80
Bucher Engraving Co.....	249.09
Clerical Assistance.....	3.25

\$1,901.76

Balance on hand Feb. 26, 1938 (Huntington National Bank).....	437.20
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\$2,338.96

As of this date bill for November, 1937 number of the Journal, amounting to \$497.17, is unpaid. All other 1937 bills are paid.

Upon motion this report was accepted and placed on file. Dr. Transeau was appointed a committee of one to audit the Business Manager's report.

The meeting adjourned about 3:00 P. M.

Respectfully submitted,

B. S. MEYER,
Secretary.

Report of the Library Committee

COLUMBUS, OHIO, April 27, 1938.

To the Ohio Academy of Science:

The members of the Library Committee were much saddened at the loss of one of its members, Dr. L. B. Walton, who died the day after he had been re-appointed to the committee for another three-year term. A biographical sketch of him will be given by the Necrology Committee.

The work of the chairman of this library committee has been of the customary routine nature, such as taking care of the correspondence, of the sales of publications and the mailing list, claiming issues of periodicals that somehow had failed to arrive and posting out issues of our journal when requested. In addition the stock of last year's Ohio Journal of Science was assembled into volumes, wrapped and stored in the Ohio State University Library. Just before the first number of the 1938 volume of the Journal was issued the mailing list was checked with that of the Treasurer of the Academy and also with the official list in the mailing room.

Five new exchanges were secured during the year and fourteen were dropped. The total number of exchanges is now 362, of which 95 are in this country and 267 in foreign countries.

The sales of publications amounted to only \$22.39. Eighteen sales were made and thirty-four Special Papers were sold, but none of the Annual Reports. Five of these eighteen sales were made to

book dealers who purchased fourteen items or nearly half of all that were sold and who furnished one-third of the entire sales amount. A change in policy accounted for this increase in sales to dealers. In former years they received no discount, hence there was no incentive to purchase any papers. However, as the stock of all of the Reports and of most of the Special Papers is large and as only two have been published later than 1912, it was decided by the library committee to allow a ten per cent discount to dealers and thus to increase the sales if possible. If this had not been done the sales for 1937 would have consisted of only twenty items at the very small total of \$14.70. The sum of \$22.39 plus 29 cents sales tax has been given to the Treasurer of the Academy.

At the end of 1937 the sum on deposit in the building and loan company amounted to \$32.25. This amount plus \$4.75 which had previously been paid to the Treasurer, or \$37.00, represented the total dividends earned by the various sums which had been deposited in the five and a half years from June, 1926, to January, 1932. On January 18, 1938, this account was closed and the entire amount was given to the Treasurer of the Academy.

In accordance with the policy of the last few years, no formal financial statement is given in this report, but it has been duly made and is on file for the purpose of record in the office of the Treasurer and also in the library of the chairman of this committee.

The privilege of borrowing books from the Ohio State University Library is called again to the attention of the members of the Academy, for it has been five years since this was done, and many new members have joined during this time. Some of the other members also do not seem to realize that they are entitled to draw out books as individuals if they live at a distance from a college or university. For those who are associated with an institution it is preferred that they borrow books through their own library on the inter-library loan plan. There is much material in the library of the Ohio State University that surely could be of value to the members of the Ohio Academy of Science if they would make use of it.

Respectfully submitted,

ETHEL MELSHEIMER MILLER,
Chairman.

Report of the Membership Committee

WOOSTER, OHIO, May 7, 1938.

To the Ohio Academy of Science:

Applications for membership in the Academy properly countersigned and accompanied by one year's dues were received by your committee from the following persons whose election to membership we cordially recommend, viz.:

AMSTUTZ, MARY E., (A), 410 Pleasant St., Ashland.

ARENSON, S. B., (H), University of Cincinnati, Cincinnati.

BARNES, HUGHES, (A and B), 202 N. Urich St., Uhrichsville.

BERNHAGEN, RALPH J., (C), O. S. U., Columbus.
BLACKBURN, N. D., (A), O. S. U., Columbus.
BOSSERT, ROY G., (H), O. W. U., Delaware.
BRAND, PAUL J., (G), 1683 Biddle St., Ravenna.
BUSCH, KARL HENRY, (A), 2424 Sherwood Rd., Bexley.
BUSCH, HARVEY L., (A), 1596 Parkwood Rd., Lakewood.
CAMPBELL, F. L., (A, D and H), 1952 Concord Rd., Columbus.
CATALINE, ELMON L., (D and H), University of Toledo, Toledo.
CHITTAM, JOHN W., (H), College of Wooster, Wooster.
CRIST, EMMITT L., (B), I. O. O. F. Bldg., Circleville.
CROWL, GORDON S., (B), O. S. U., Botany Dept., Columbus.
DEMARINIS, FRANK, (A), 2170 Stillman Rd., Cleveland Heights.
DEXTER, RALPH W., (A and B), Kent State University, Kent.
DUNGAN, THEODORE C., (E and F), 83 Sixteenth Ave., Columbus.
ELSASS, DONALD H., (A and H), 670 Vernon Rd., Bexley.
ERF, HERBERT A., (F), 16827 Fernway Rd., Shaker Heights.
GRADY, ROY I., (H), College of Wooster, Wooster.
FROMM, GUY, (F), Capital University, Columbus.
HAMILTON, DR. FRANK E., (D), Kinsman Hall, O. S. U., Columbus.
HERRICK, J. ARTHUR, (A and B), Kent State University, Kent.
HESKETT, CLARENCE, (G), O. S. U., Columbus.
HOKE, ROY DAVIS, (C and F), 1750 S. Union Ave., Alliance.
HOUSLEY, C. R., (A and B), R. F. D. No. 1, Pemberville.
HOWLETT, FREEMAN S., (B), 357 Blessing Ave., Wooster.
JONES, CLYDE H., (B), 34 W. Norwich Ave., Columbus.
KARNES, LOWRY B., (G and C), 488 W. Seventh Ave., Columbus.
KNOX, GEORGE, (E and F), O. S. U., Columbus.
LACKEY, JAMES B., (A), Third and Kilgour Sts., Cincinnati.
LAMBERT, RAY, (F), 3422 Woodburn Ave., Cincinnati.
LAPHAM, MARJORIE J., (A), 40 E. South St., Painesville.
LEDGERWOOD, RICHARD, (E, D and A), 1864 Summit St., Columbus.
MACHLE, DR. WILLARD, (D), College of Medicine, Cincinnati.
MAHARRY, JOHN P., (G, C and F), 413 W. Warren St., Youngstown.
MASON, HELEN MANDILLA, (B), R. F. D. No. 4, Newark.
MAYFIELD, SAMUEL M., (C and G), Bowling Green State Univ., Bowling Green.
MILLER, EUGENE J., (C and G), Loudonville Times, Loudonville.
MOKE, CHARLES B., (C), College of Wooster, Wooster.
MYERS, R. MAURICE, (B), O. S. U., Dept. of Botany, Columbus.
NOLAN, ALFRED FRANCIS, (D), 40 Brevort Rd., Columbus.
PALINCHAK, STEVE, (H, F and I), 2546 Auburn Ave., Cincinnati.
PORTER, WALTER P., (B and A), 135 Grosvenor St., Athens.
POWELL, G. W. H., (H, F, A and I), Urbana Junior College, Urbana.
RAY, FRANCIS E., (H), University of Cincinnati, Cincinnati.
RICHARDS, C. F., (E), Denison University, Granville.
RIEVESCHL, GEORGE, JR., (H, F and I), 112 Mill St., Lockland.
RIFE, D. C., (B and A), 1483 N. Star Rd., Columbus.
ROSZMAN, FOSTER D., (A), Bowling Green Univ., Bowling Green.
SALETET, DR. LOUIS, (C), University of Dayton, Dayton.
SCHWARZBEK, WM., (E), Wittenberg College, Springfield.
SCOFIELD, EDWARD H., (E), Columbus.
SEAMAN, ELWOOD A., (A and B), 1368 Beall Ave., Wooster.
SHILLING, E. R., JR., (B and A), Kent State University, Kent.
SOLBERG, ARCHIE N., (D), University of Toledo, Toledo.
SOUTHWICK, ERMAN DEAN, (C), Mt. Union College, Alliance.
STEDTMANN, WALDO E., (B), Bowling Green State Univ., Bowling Green.
THOMPSON, ISABEL, (B), 3317 Jefferson Ave., Apt. 21, Cincinnati.
WALLACE, ATWELL M., (B, H and C), 232 W. Lane Ave., Columbus.
YOCUM, DR. LINCOLN A., (D), Wooster.

Respectfully submitted,

JOHN L. RICH, *Chm.*
GEORGE D. HUBBARD
D. F. MILLER

*Report of Dr. A. E. Waller, Academy Representative on the
"Save Outdoor Ohio" Council*

WOOSTER, OHIO, May 7, 1938.

To the Ohio Academy of Science:

For the first time in Ohio's history, we are presented with the possibility of developing the Lake Erie shore to make it available for the use of the people of Ohio.

The Ohio legislature, in special session February 28, 1938, adopted a resolution memorializing the Conservation Council to purchase lands as sites for the establishment of state parks along the shores of Lake Erie for conservation and recreation purposes. The resolution provided for the appointment of a committee, with expenses to be paid from legislature committee funds, to make a study of suitable areas on the shore of Lake Erie, and report back to the legislature at any special session.

Governor Martin L. Davey, in a radio address March 24, stated: "It is surprising that Ohio is the only state bordering on the Great Lakes that does not provide park facilities for its people. In fact, our public parks are pitifully inadequate, and if we are to do a really good job, this state must start soon to revise its policy and program with reference to public parks. . . . This, I believe, should be the next great forward step."

The sentiment expressed in the legislature's resolution and in Governor Davey's radio address is well founded. The state of Ohio does not own a single square foot of land on the shore of Lake Erie which can be used for conservation or recreational purposes. Other adjoining states have developed elaborate park systems for the citizens of their states, and in most cases these states have less natural advantages than Ohio.

The Save Outdoor Ohio Council, supported by a number of state-wide organizations interested in the conservation of our natural resources and restoring our wild life, is sponsoring a land-acquisition program for the purpose of establishing and developing a series of state parks along the shores of Lake Erie.

Approval by the Academy of the following resolution is heartily recommended, viz.:

WHEREAS, There are no state park facilities on the shores of Lake Erie for wildlife conservation and recreational purposes; and

WHEREAS, The establishment of state parks on the shores of Lake Erie would provide conservation and recreational facilities for the people of our state;

Therefore, be it Resolved, by the Ohio Academy of Science, that the Conservation Council of Ohio is urged to develop a Lake Erie State Park Program, and that the members of the Legislature of Ohio be requested to pass necessary legislation appropriating funds to purchase lands as sites for the establishment of State Parks along the shores of Lake Erie for conservation and recreational purposes.

Be it further Resolved, That any such parks developed on the shores of Lake Erie shall be known temporarily as Lake Erie State Park No. 1, Lake Erie State Park No. 2, Lake Erie State Park No. 3, etc., in order that they may be widely presented and promoted as conservation and recreational areas for the use of the people of Ohio. (Approved)

Report of the Committee on Necrology

To the Ohio Academy of Science:

It becomes the sad duty of your committee to record the death during the past year of five of the prominent members of the Academy. With the material available it has been difficult to give adequate tributes to their service in the Academy or the measure of their contribution to science.

Only a few days after the close of our last year's meeting we were shocked by news of the sudden death of Dr. Walton, of Kenyon College.

LEE BARKER WALTON

Lee Barker Walton, born at Bear Lake, Pennsylvania, November 12, 1871, died at Gambier May 12, 1937. His connection with the Ohio Academy dated from his first year of service as Professor of Biology at Kenyon College, 1902, and he has been one of our most loyal and useful members in the succeeding years. He served as secretary from 1905 to 1912 and as president in 1913. He has also been a valued member of a number of important committees and was one of the Trustees of the Research Fund for several years, 1930 to 1936.

Dr. Walton was a man of varied interests and aside from his important contributions in biology was influential in the promotion of athletics and was fond of games and social contacts. He was an exceptional teacher and inspired many young men to go forward in biological studies especially in medicine. He spent the summers of 1905-'06-'07 and '09 at the Lake Laboratory and was a contributor to the Ohio Biological Survey. His valuable articles on "Euglenoidea of Ohio" and "Studies of Organisms in Water Supplies" are in demand from many quarters outside of Ohio. His genial companionship and stimulating personality will be greatly missed by a large circle of friends.

JOSEPH A. CULLER

Dr. Joseph A. Culler, who died May 18, 1937, was for many years a professor at Miami University and Dr. S. R. Williams, a long time associate and friend, has furnished the following tribute:

"Dr. Joseph A. Culler was born in Wayne County, Ohio, March 5, 1858, and died at the Miami University hospital in Oxford May 18, 1937, in his eightieth year. He received the A.B. in 1884 and the Ph.D. in 1900, both degrees from Wooster College. His wife, Isabella Carnes, who survives him, also attended Wooster.

"Dr. Culler was principal of the high school in Cambridge, Ohio, the year 1884-85 and of the high school in Kenton from 1889 to 1900 and in Bowling Green from 1900 to 1903.

"In 1903 he was called to the chair of Physics in Miami University and retired from active service in 1926 because of the serious results of X-ray burns received during experimental work. Dr. Culler was quiet and reserved so that one had to become acquainted with him to appreciate his many-sided abilities. During his undergraduate course he directed the early gymnasium classes at Wooster and through his secondary school teaching, in addition to his special work in physics, he found the time to write a graded series of texts in physiology with many original illustrations.

"In college he prepared his own text book and set of laboratory directions for the introductory physics course and many of the advanced texts. His style was terse, simple and easily comprehended. His demonstrations of physical phenomena were carefully planned and with details thoroughly worked out so that the interest of the hearers never waned. He was an inspiring and painstaking teacher, experienced in the difficulties and discouragements of the young. His time and assistance were freely available for any one in need whether student, faculty or townsman.

"He was for many years on the Board of Public Affairs of the village of Oxford. He was a member of the Beta Theta Pi college fraternity and of the Masonic order. A life-long member of the Presbyterian church, he taught a men's class in the Sunday School and as long as he was physically able. His younger colleagues, especially those working in the same building, regularly relied on his manipulative ability to straighten out refractory apparatus and much more on his judgment and friendly advice to straighten out unfortunate kinks in their lives."

JOHN M. CONDRIN

In the death of John M. Condrin, of Toledo University, the Academy has lost one of its very promising young members. He joined the Academy in 1927 and his activities in research gave promise of valuable contributions in his chosen field. The following obituary notice in *Science* by his associate and friend seems especially appropriate in this connection:

"John M. Condrin, associate professor in the department of biology of the University of Toledo, died on June 9 [1937] at the age of thirty-two years. Professor H. H. M. Bowman, in whose department he was an associate, writes: 'He had been a member of the department since 1927. He was a graduate of Western Reserve University and received the M.A. degree from that institution in 1927 and was just completing work for his doctorate at the University of Michigan. He was a member of several national zoological societies and of both the Ohio and Michigan Academies of Science. He was the author of several publications on nudibranchs, genetics of pigments in mollusks and the physiology of hibernation in mammals. We will sorely miss his pleasant, active presence and scientific co-operative spirit.'"

RODNEY D. BOOK

Dr. Rodney D. Book, Corning, Ohio, who was a member of the Academy from 1933, died November 6, 1937. From notices published

at the time we glean the following items which bear upon his connection with the Academy:

Dr. Book was an ardent student of bird life and lectured extensively on this subject, and his death from pneumonia was said to have followed attendance of the National Audubon Society convention in New York City two weeks before his death. He is credited with several books on music and with musical compositions, these activities and his bird studies being secondary to his practice as a physician. He was a graduate of the Kentucky School of Medicine, the New Church Theological School of Cambridge, Mass., and the Cincinnati College of Music. His medical practice began at Corning in 1892 and continued until his death.

RICHARD E. WOLFE

Dr. Raymond Osburn has from his personal friendship with Mr. Wolfe supplied the following:

Mr. Richard E. Wolfe, of Clyde, Ohio, died suddenly during the December holidays of 1936-37. He became a member of the Academy in 1929 and continued until his untimely death. His college work was done at the Ohio State University, where he was granted the degree of B.E. in 1926. The summers of 1929-30-31 were spent at the Franz Theodore Stone Laboratory at Put-in-Bay, where he completed the work for the M.Sc. degree in zoology in 1931. His Master's thesis was the result of a very careful study of the ecology of the Miller Blue Hole (now State property) some six miles west of the better known Castalia Blue Hole. In this work his knowledge of chemistry as well as aquatic biology was a distinct asset. For ten years Mr. Wolfe had taught chemistry and biology in the high school of his home town and was held in high esteem, not only for the high grade of his work as a teacher, but also for his sterling character and genial personality.

Respectfully submitted,

HERBERT OSBORN,
FRANK J. WRIGHT,
Committee.

Report of the Nominating Committee

For President..... CLAUDE E. O'NEAL

For Vice-Presidents—

- | | |
|-------------------------------|------------------|
| A. Zoology..... | ROBERT A. HEFNER |
| B. Botany..... | PAUL B. SEARS |
| C. Geology..... | W. STORRS COLE |
| D. Medical Sciences..... | L. F. EDWARDS |
| E. Psychology..... | JAMES R. PATRICK |
| F. Physics and Astronomy..... | LEON E. SMITH |
| G. Geography..... | FRED A. CARLSON |
| H. Chemistry..... | HARVEY V. MOYER |

For Secretary..... WILLIAM H. ALEXANDER

For Treasurer..... EUGENE VAN CLEEF

For Executive Committee..... { CHARLES G. SHATZER
J. PAUL VISSCHER

<i>For Trustee, Research Fund</i>	HERBERT OSBORN
<i>For Administrative Board, O. J. S.</i>	WALTER H. BUCHER
<i>For Library Committee</i>	GEORGE D. HUBBARD
<i>For Committee on Conservation</i>	{ G. W. CONREY
	{ E. L. WICKLIFF
	{ ROBERT B. GORDON
<i>For Representative on Save Outdoor Ohio Council</i>	A. E. WALLER

As to the Director for the Semi-Centennial, your committee can only report "progress." We have made a very careful canvass of the entire membership list and by a process of elimination have reduced it to some seven or eight names of persons whom we believe to be entirely eligible for the position. We therefore ask the privilege of passing this list on to the new Nominating Committee and in view of the many rather elusive considerations involved recommend that this committee be given more time with power.

Respectfully submitted,

A. W. LINDSEY,
Chairman.

A motion prevailed that the nomination of a Director be referred to the new Nominating Committee with power and instructions "to make the appointment within six months if possible."

Report of the Committee on Resolutions

WOOSTER, OHIO, May 7, 1938.

To the Ohio Academy of Science:

The Committee on Resolutions submits the following conclusions for your approval, viz.:

Resolved, That the members of the Academy express their appreciation to President Wishart and staff of the College of Wooster, and to Director Secrest and staff of the Ohio Agricultural Experiment Station, for making available such excellent facilities for the meeting; and

Be it further Resolved, That the Academy indicate its indebtedness to the local committees under the efficient leadership of Dr. Karl Ver Steeg, chairman, for their untiring efforts in arranging details for the effective conduct of the general and special sessions, and for the satisfactory housing of the out-of-town guests; and

Be it further Resolved, That the members of the Academy, especially the men, extend a vote of thanks to the local committee, and to Mr. and Mrs. Edmund Secrest in particular, for providing delightful entertainment for the ladies; and finally,

Be it further Resolved, That the Academy express its pleasure in the interest shown by the public press of Wooster and other centers as evidenced by the publicity given the proceedings of the meeting.

Respectfully submitted,

EUGENE VAN CLEEF, *Chairman*,
WILLIAM C. BEAVER,
J. PAUL VISSCHER.

Report of the Committee on Conservation

WOOSTER, OHIO, May 6, 1938.

To the Ohio Academy of Science:

Your Committee on Conservation begs to submit the following report of conservation activities in Ohio during the past year.

Soil Conservation—The land resources of Ohio are used chiefly for crops, grass and forests. The purpose for which each area can best be used can be determined only by a study of the conditions existing in different parts of the State. The adoption of a program of soil conservation based on these studies can be brought about by a systematic educational program.

Our present system of crop production leads to soil deterioration. This trend has been expressed by means of a mathematical formula which properly evaluates all forces having to do with soil improvement and soil deterioration—this includes credits for the use of fertilizer and manure, and debits for uncontrolled erosion. Where, at present, the productivity balance is negative (indicating soil deterioration) it is possible, by means of a change in cropping system, to secure a favorable balance resulting in conservation of the soil.¹

As a part of the educational program of the Extension Service of the Ohio State University, county agricultural planning committees composed of representative farmers have been organized in each county of the State. These committees have studied the local situation and determined what changes in cropping systems would be desirable from the standpoint of soil conservation. Following the reports of these committees a program of soil conservation has been discussed with the groups of farmers in each county, and recommendations for changes in cropping systems have been made. In order to show the effects of these practices, a number of farms have been selected, so far in 32 counties, on which the recommendations are being carried out. In some cases this program is in co-operation with the Soil Conservation Service.

The Soil Conservation Service has four demonstration areas in which erosion control measures are being practised in co-operation with farmers. Under the direction of this Service, 11 CCC Camps are carrying out a program of soil conservation for the control of erosion on individual farms outside of the demonstration areas.

The research program for soil conservation includes the work of the Ohio Agricultural Experiment Station and the Soil Conservation Service. The Ohio Agricultural Experiment Station is engaged in making detailed soil surveys by counties, in order to secure information in regard to soil conditions in all parts of the State. Investigations of the effect of crop rotations and the use of fertilizer, manure and lime are being carried out on the main Station farm at Wooster, and in 13 outlying farms.

¹See "Our Heritage the Soil" by R. M. Salter, Ohio Agricultural Experiment Station.

The Soil and Water Conservation Experiment Station at Zanesville, operated by the Soil Conservation Service, is investigating the rate of soil loss under various cropping systems and the effect of different soil conservation measures such as strip cropping, terracing, etc., in the control of erosion.

The Hydrological Experiment Station at Coshocton is studying what happens to the rainfall in runoff, percolation, evaporation and transpiration; the effect of erosion control measures on the losses of water; and the effect of this loss on flood control.

These investigations will serve as a basis for planning for the soil conservation in Ohio. Through the educational work of the Extension Service, the program will be carried to the farmers.

Sealing Abandoned Coal Mines—Report from the Engineering Division of the Ohio Department of Health states that the work of sealing abandoned coal mines in Ohio, to reduce stream pollution caused by acid mine drainage, has continued since its inception in December, 1933. Abandoned mines have now been sealed in 24 counties with funds provided by the federal government through CWA, ERA, and later WPA. During the year 1937, 11,638 mine openings were closed at a total cost to the federal government of \$436,270.11, or \$37.49 per opening. Of this total cost, \$389,493.63, or 89.3 per cent, was expended for labor; \$9,133.54, or 2.1 per cent, for materials; and \$37,642.94, or 8.6 per cent, for engineering supervision and statistical records. The total number of openings closed to April 1, 1938, is approximately 34,000.

During the year 1937, 6,532 mine drainage samples were collected and analyzed in the Health Department Laboratory. Of 734 mines closed in 1937, the average number of openings was 16.3 per mine. The original acid drainage per mine in tons per year was 82.27. The construction cost per year per ton-original-acid was \$6.82. Up to November 1, 1937, the records of 566 mines showed reduction of their acid drainage content amounted to 28,560.39 tons, or 55.6 per cent per year.

On April 1, 1938, 1,820 men were at active work under WPA on this project which was being carried on in 20 counties. The program has been practically completed in Carroll, Mahoning, Meigs, Morgan, and Wayne counties. During 1937, 13 persons were given regular employment on the engineering supervision and statistical staff.

Exhibits of mine sealing work were shown in five leading cities in the state during the year (twice in Athens). A great amount of newspaper publicity was also obtained. The work will be continued to near completion in 1938. However, a continuing program on a smaller scale will be necessary because of the continual abandoning of openings and for constant supervision to assure that old sealings remain intact.

Department of Forestry—The Ohio Department of Forestry is furnishing fire protection to one million acres of forest land. There are an additional million acres which are not receiving protection due to insufficient funds. This includes several areas in eastern and north-eastern Ohio and approximately 150 square miles south and west of Toledo.

This Department is administering eight state forests and three state forest parks. These areas are visited by one-half million people annually, and on many of the tracts the chief activity of the ranger is the supervision of public use areas.

Six CCC camps remain in operation on the state forests. They are located one each in the following forests: Shawnee, Scioto Trail, Hocking, Zaleski, Mohican, and Bryan Park.

The Guy B. Findley State Forest at Wellington has been increased by gift to 890 acres. Mr. Hugh Taylor Birch has given four tracts of land which adjoin the John Bryan Forest Park as a memorial to Edward Orton. About 3,000 acres of state forest land have been acquired during the past year.

Tree distribution from the Department's nurseries will amount to approximately five million trees. Most of the trees have been used by farmers to reforest idle land.

One man who was added to the technical staff last October is devoting his time to research in farm woods. The Department is also conducting research in its forest arboretum at the Experiment Station and doing a considerable amount of personal service work with individuals and organizations throughout the State.

The Forest Tax Law which is administered by this Department, involves the part time duty of one forester.

Division of Conservation—During the past year the Division of Conservation has enlarged its fish and game management activities by dividing the State into seven game management districts and eleven fish management districts and placing a technical man in charge of each.

Wildlife management in the form of "cropping" the land and water is being stressed as the best solution to the wildlife problem. Law enforcement and artificial propagation are receiving attention, but the relatively new conservation technique, "Management," is due to grow rapidly in the future.

Ohio Wildlife Research Station—The Ohio Wildlife Research Station, co-operatively maintained by the Ohio State University, the Ohio Division of Conservation and the United States Biological Survey, is now in its third year. Its main office is on the Ohio State University campus, but much of the work is done at eight substations located in various biological units of the State.

The chief objectives are basic fact finding necessary for the conservation and development of the wildlife resources of Ohio, the training of skilled personnel competent to administer these resources, and demonstration and education projects leading to proper appreciation, management and utilization of them. To attain these objectives, a major research program is in progress, with research problems on Hungarian Partridge, Pheasant, Fox Squirrel, Gray Squirrel, Deer, Ruffed Grouse, Cottontail Rabbit, Raccoon, the Ohio breeding species of waterfowl and indirectly nearly all Ohio land vertebrates. A co-operative waterfowl banding project has been inaugurated at Pymatuning Reservoir in connection with more extensive studies of breeding waterfowl. More than 400 ducks have been banded to date.

Eight men are engaged in full-time research, assisted by a number of undergraduate students. The preliminary work on Gray Squirrel, Ruffed Grouse and Deer is completed, and one phase of disease investigation, "Parasites of the Gray and Fox Squirrel," is nearing completion. The development of techniques for measuring animal populations and methods of conservation management are also subjects of research and investigation.

In the development of an extension education program, assistance and advice have been given to 4-H club leaders and to many farmer-landowners whose inquiries have been sent to the Research Station. Papers on completed phases of conservation research have been distributed on request, in addition to many technical and educational papers. More than 75 lectures and radio talks have been given by the Station research men on various phases of wildlife conservation during the past year. A "Manual of Ohio Wildlife Resources," which will give qualitative and quantitative information on all wildlife groups in Ohio, is in process of preparation. A library relating to wildlife conservation is rapidly growing and is available to the people of the State.

For demonstration purposes, wildlife management units of township size have been set up in northwestern Ohio where effectiveness of "production" and "harvest" techniques are being tested and farmer-sportsmen relationships studied. The 52,000 acres of state owned forest lands in the unglaciated hills of southern Ohio have been used for research and demonstration of management methods.

Eight Wildlife Research Stations similar to the one in Ohio are located on a regional basis throughout the United States, bringing into close co-operation the large State Universities, the State Conservation Departments and the U. S. Biological Survey. The work of these stations is based on facts, not opinions, and involves the most careful application of scientific data and ecological principles, in modifying the land use program for the conservation of our valuable wildlife resources.

Roosevelt-Shawnee Project—A three-year wildlife research project sponsored by the Ohio Academy of Science is nearing completion on the Roosevelt Game Preserve. The investigation has been jointly supported by the Ohio Division of Conservation and the Ohio Wildlife Research Unit at Ohio State University. The investigator, Mr. F. B. Chapman, has been especially interested in wildlife land-use and forestry-wildlife relationships and has attacked the problem from those angles. Basic data on which a sound management program may be based, has been obtained on Gray Squirrel, Ruffed Grouse and White-tailed Deer (all forest game species). Preliminary work on the Shawnee-Roosevelt project will be completed by the present worker in August, 1938.

The gray squirrel study indicated that the Roosevelt area supported a population of only 10 squirrels per 100 acres during an excellent squirrel year. Squirrel populations fluctuated from year to year. A five-year cycle was rather definitely demonstrated. Three mimeographed publications dealing with various phases of the study have

been issued, and a summary report will soon appear in the Transactions of the Third North American Wildlife Conference. A 120-page research report dealing with the gray squirrel has been completed.

A deer population of about 1,200 exists in Western Scioto and Eastern Adams counties. The annual increment there is about 200 fawns. Approximately 100 deer are killed annually. The principal causes of deer mortality are, in the order of their importance: (1) poaching, (2) dogs, (3) highway accidents, (4) other accidents. The food supply is sufficient for the number of deer now present. The Ohio deer range should be extended in the next decade due to the reforestation trend in southeastern Ohio. A paper on "Trends in Land-use as Related to the White-tailed Deer in Ohio" will be given at the Ohio Academy of Science meeting at Wooster in 1938. A research report on this species is being completed.

About 1,000 ruffed grouse occur on the 9,000 acre Roosevelt Preserve. A 50-page research report has been completed. A mimeographed report on the "Breeding Birds of Nile Township, Scioto County" has been published as Release No. 40, Ohio Wildlife Research Unit.

During the past three years 14 permanent sanctuaries and refuges were established on state lands in co-operation with the Ohio Division of Forestry and the Division of Conservation. Sanctuaries are of four types: (1) wilderness areas for research, (2) recreational areas, (3) wildlife management areas, and (4) forestry management areas. Ten sanctuaries (involving 4,000 acres) are located in Scioto County (on Roosevelt Preserve and Shawnee Forest), two in Pike County (600 acres), and two in Ross County (600 acres). All state lands outside the sanctuaries are designated as "State Hunting Preserves." Controlled squirrel and rabbit hunting was permitted in 1935, 1936, and 1937. About 3,000 hunters were accommodated during that period.

In a study of the effects of timber management on wildlife, it was found that about 56,000 potential den trees were removed from the Shawnee Forest during stand-improvement work. However, the felled trees made the area more attractive for grouse, which utilized them for drumming logs. In general, timber management resulted in a greater production of wildlife foods. The relations of forest fires and severe floods to wildlife were also studied. Separate research reports on surveys of food, cover and water resources in the region have been completed.

The management program involved the preparation of 2,000 feet of clearings (100 feet wide) in forest areas, the construction of 15 log and rock dams, erection of deer crossing signs, provision of salt and winter feed for deer, cultivation and planting of annual food patches, cleaning and enlarging 16 deer licks and water-holes, permanent plantings of 60,000 game food and cover plants of 70 species in the Odell Sanctuary, and the establishment of a small nursery on the Roosevelt Preserve. The production of nursery stock in large quantities was impossible due to lack of watering facilities. However, 2,880 plants will be available for distribution to the seven wildlife management districts of the state in April, 1938.

Ohio Fish Management Program—The Ohio fisheries management program involves the arbitrary division of the State into eleven fish management districts, each consisting of a single large stream system, or a series of small similar stream systems, or a group of comparable lakes or ponds. A biologist is stationed in each district with headquarters at a university or college where he has access to laboratory and library facilities and can stimulate research upon important problems by the faculty and student biologists. It is the job of each of these men, called fish management agents, to become thoroughly familiar with the fish producing waters and their fish populations in his territory. Fish populations cannot be studied in their entirety, and the method of collecting representative samples is used. From the fish collected much information is obtained. Scales are taken and sent to headquarters where they are studied and measured, and the rate of growth is determined. Waters are considered to be carrying below their capacities when the fish have grown abnormally fast and such waters are supplied with more fish from the inland State fish farms. Fishes are supported by very complex food chains which may be varied and different for each species, and all details of these chains have not yet been discovered or formulated. Some studies of fish food production have shown little correlation with actual fish production, and studies of the growth rate and abundance of fishes in such waters have appeared to be the only criterion for judging their fish producing and carrying capacities.

There is a State fish hatchery at Put-in Bay where the eggs of commercial lake fishes are incubated and hatched, and the young fish are liberated in Lake Erie promptly after hatching. The south shore bays and island region of Lake Erie also provide good sport fishing and the excess fishes of the gamey species are transplanted to inland waters to improve fishing there. There are also about 3,000 acres of waters impounded for city waterworks which serve as rearing ponds because public fishing is not permitted in them and the fishes are transplanted to waters which may be fished. There are smaller establishments known as State fish farms located at St. Marys, Indian Lake, Buckeye Lake, Portage Lakes, Defiance, Bucyrus, Chagrin Falls, London, Xenia, Newtown, Piqua, and Kincaid Springs. At these places most of the practices of farm management are used, including pond bottom soil management, plant crop production (and weed control), intermediate animal crop production (small crustaceans), and lastly, fish production. Fish production is practised as a specialized phase of animal husbandry, including the development and maintenance of brood stocks of bass, bluegills, bullheads, forage minnows and crayfish. This involves the improvement of stocks by selective breeding, and the rearing of the young, with full attention to food, sanitation, and behavior requirements.

Since many land owners object to trespass by anglers, part of the Ohio fish management program involves the acquisition of control of stream margins by the State Division of Conservation. A number of land agents are employed to contact land owners and secure fishing

easements. Efforts are concentrated upon the streams recommended by the local sportsmen's organization, but will be extended presently to include all fishable streams in the State. These easements protect the land owner against property damage, as the State builds parking places for anglers' cars, builds stiles over fences, and exercises control over the fishing in the streams. Streams controlled by easements will be improved by erosion checks, small dams, deflectors, etc., and five crews of men will soon be operating throughout the State doing stream improvement work.

Research upon problems fundamental to the program is being conducted as a co-operative project with the Franz Theodore Stone Biological Laboratory of the Ohio State University. Some of the problems being investigated are the effects of small dams in streams upon fish food production and upon the fish populations present, migrations of stream fishes, viability of winter eggs of water fleas, prevalence and control of fluke infections of fish, effects of flood waters on stream fishes, distribution of mussels in Ohio streams, effects of turbid waters on aquatic plants, cycles of fluctuations of abundance of game fish species, and methods of producing bait minnows and crayfish.

Recommendations—Your Committee recommends:

(1) That the Ohio Academy of Science go on record favoring an annual appropriation from the general revenue funds sufficient to permit the Ohio Forestry Department to purchase submarginal lands for forestry and recreational purposes and for personnel sufficient properly to care for such lands.

(2) That suitable legislation be enacted to permit the state to take over such tax delinquent land as may be desirable for purposes of recreation or conservation when unpaid taxes shall have accumulated for three years, the title to such lands to be held by the Forestry Department, the Division of Conservation or the Ohio State Archaeological and Historical Society.

(3) That a joint meeting of the forestry and wildlife interests of the state be held, for the purpose of securing further co-operation between and co-ordination of the two fields of endeavor toward the end of better conservation of our natural resources.

(4) That suitable legislation be enacted toward outlawing pole-traps. It is the firm conviction of your committee that the pole-trap, except in a few cases, is objectionable because it destroys more beneficial birds than destructive ones.

(5) That further areas at Fort Hill, the Oak Openings west of Toledo and at Mohican State Park be acquired for conservation and recreational purposes. Your committee also especially recommends for this purpose the acquisition of land in the vicinity of Beaver Creek in Columbiana County, Rock Run in Jackson County, and marsh areas along Lake Erie.

(6) That suitable literature be provided relating to our State recreational areas for distribution to visitors to such areas.

(7) Your committee commends the important research on wildlife problems which has been accomplished in the Scioto and Pike County State properties, and urgently recommends that such research be continued.

(8) Your committee reiterates its firm opposition to pest hunts and "vermin" killing campaigns and to indiscriminate poisoning campaigns directed against our native mammals or birds.

Respectfully submitted,

G. W. CONREY,	EDMUND SECREST,
E. L. WICKLIFF,	LAWRENCE E. HICKS,
ARTHUR T. EVANS,	F. H. KRECKER,
EMERY R. HAYHURST,	WILBER E. STOUT,
	EDWARD S. THOMAS, <i>Chairman.</i>
